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EXAMINER				
BARRY, CHESTER T				
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1797				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTOMail@traskbritt.com

Office Action Summary

Application No.

10/584,358

Applicant(s)

FOX ET AL.

Examiner

CHESTER T. BARRY

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10, 14 - 16, 18-32 is/are rejected.
- 7) ☒ Claim(s) 8-9, 11-13, 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date 9/8/08
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Claim 1 is exemplary of the invention:

1. (Original) A system for water treatment comprising
 - a first treatment area for receiving waste water and aerating the waste water to enhance aerobic bacterial treatment of waste water,
 - a second treatment area for receiving waste water from the first treatment area and circulating waste water within it to enhance bacterial treatment of waste water,
 - a third treatment area configured to receive waste water from the second treatment area and including a filter having at least one membrane for filtering the waste water to substantially remove particulate matter of a predetermined size,
 - an outlet connected to the filter and configured to output filtered waste water from the filter and
 - a transfer means for transferring waste water from the third treatment area to the first treatment area.

USP 7323107 to Ames (assigned to AQUA CLARUS) describes a system for water treatment comprising an aerobic trickle bed 14 (page 14 line 4), a mixer in bioreactor 30 (page 14 line 15) receiving waste from the trickle bed, and a membrane treatment unit 40 receiving supernatant from mixed bioreactor 30. A quantity of moist solids removed from the membrane treatment unit 40 is returned to the trickle bed (page 14 line 20) via a conduit 42. Insofar as the trickle bed is "aerobic," it is necessarily capable of aerating the liquid waste 13 from separator 12.

Notwithstanding the lack of clarity of claim 2, the conduit carrying moist solids from the membrane unit directly to the trickle bed appear capable of transferring matter the other way as well, i.e., from the trickle bed to the membrane unit insofar as there is no disclosure of a check valve or other such device presenting reverse flow back to the membrane.

Per claim 5, a trickle bed inherently describes a chamber, e.g., vessel, tank, or the like, within which the particulate media of the trickle bed is supported. A chamber may be open or closed to the ambient environment.

Per claim 6, insofar as this claim recites only an optional feature, a structure meeting the limitations of the claim from which it depends, i.e., claim 5, meets the limitations of claim 6 even if it does not comprise the claim 6 – recited optional feature.

Per claim 14, the trickle bed has a recirculation loop.

Accordingly, claims 1 – 2, 4 – 6, 14, 23 – 24 are rejected under 35 USC Sec 102(b) as anticipated by Ames.

Claims 2, 3, 10, 15, 21-22 are rejected under 35 USC Sec 112, 2nd paragraph, for it is unclear whether the very same "transfer means for transferring waste water from the third treatment area to the first treatment area" recited in claim 1 is the same "transfer means [which] transfers waste water directly from the first treatment area to the third treatment area." The specification at page 12 line 18 states:

The water membrane tank 14 also has an airlift pump that transfers liquid from the membrane tank 14 through conduit 23 to the recycle tank 13.

It would appear, therefore, that claim 1's "transfer means" reads on the airlift pump and conduit 23. It is unclear whether the means capable of transferring matter directly from the first treatment zone to the third treatment zone reads on structure 18.

Per claim 3, claim 1 lacks antecedent basis for the claim 3 - recited terms, "the third" and "the first transfer area."

Per claim 10, it is unclear whether it is the "distance" or the "liquid level" that can be changed.

Per claim 15, claim 1 lacks antecedent basis for the claim 15 - recited term, "opening."

Per claims 21-22, it is unclear to which "transfer means" recited in any of claims 1, 18 - 20 claim 21 refers.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Ref numeral 18 appears on at least one figure, but does not appear to be mentioned in the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Objection is made to claim 6 under 35 USC Sec 112, fourth paragraph, for failure to further limit the scope of claim 5 from which it depends. An optional recited feature does not require that the recited feature be present.

Claim 7 is rejected under 35 USC Sec 103(a) as obvious over Ames, as applied to claim 1 above, further in view of USP 6517723 to Daigger or USP 6200470 to Romero. Ames

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teaches "siphoning" the membrane retentate (solids) from the bottom of the membrane filter back to the trickle filter (col 11). USP 6517723 to Daigger describes one such way to remove membrane filter retentate from the bottom of a membrane filter treatment zone to an upstream chamber: Provide a conduit 60 through the common bottom wall of the common vessel from the membrane filter chamber to the upstream chamber using, for example, a pump 62. Alternatively, USP 6200470 to Romero shows another known manner of transferring solids to an upstream stage: Provide an inclined surface to direct downstream solids by gravity through an opening near the bottom of a common vertical wall to the upstream chamber. It would have been obvious to have employed either technique as an alternative to Ames' approach of siphoning solids from the bottom of the membrane filter zone because the art appreciates the functional equivalence of these various approaches to recirculating downstream undissolved solids for further wastewater treatment processing.

Claim 16 is rejected under 35 USC Sec 103(a) as obvious over Ames and Romero, as applied to claim 7 above, with further note of the fact that Romero shows a reduction in the width of the wall opening between the downstream chamber and an upstream chamber. See Fig. 2. It would have been obvious to have included this feature in order to facilitate net passage of the solids from the inclined surface to the upstream treatment area, as taught by Romero.

Claims 18 – 20, 26-32 are rejected under 35 USC Sec 103(a) as obvious over Ames, as applied to claim 1 above, with further note of the following. As noted above, Ames describes siphoning solids from the membrane unit to the trickle filter bed. A siphon is a pressure means because it effects the transfer of a fluid through a conduit by the imposition of a pressure differential across the length of the conduit. Moreover, it is commonplace to provide a pump or other pressure means for transferring solids-laden liquid from one vessel to another. Accordingly, it would have been obvious to have provided a pump or other type pressure-based conveyance mechanism for conveying matter from the trickle filter bed to the bioreactor and from the bioreactor to the membrane unit. Per claims 26-28, it would have been obvious to have provided pumps, or other known means for feeding, to transfer the liquids from the trickle bed, to the bioreactor, and to the membrane unit, as is conventional in the wastewater treatment field of endeavor. Per claim 29, given the nature of wastewater overflow situations, harm to the environment and human health, etc., and the overall desired to automate a task wherever economically feasible, it would have been obvious to have provided control means to maintain liquid levels within predetermined high and low levels within the Ames processing system. It would have been obvious to have controlled liquid level in vessels using pumps to move liquids into or out of vessels, as appropriate, given the conventionality of providing level control in such manner.

Claim 25 is rejected under 35 USC Sec 103(a) as obvious over Ames, as applied to claim 1 above, further in view of USP 6517723 to Daigger. Daigger suggests air

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scouring the membrane to prevent blinding the membrane with solids. Air scouring also has the effect of circulating the contents the membrane chamber described by Ames.

Objection is made to claims 8 – 9, 11-13, 17 for dependence on a rejected base claim, but would be allowable over the prior art if presented in independent form.

/Chester T. Barry/
Primary Examiner, Art Unit 1797
571-272-1152